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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Takehiro KATA et al.

Attn: PCT Branch

Application No. New U.S. National Stage of PCT/JP03/08342

Filed: December 14, 2004

Docket No.: 122056

For: METHOD OF MANUFACTURING LAMINATED MOLD AND LAMINATED MOLD

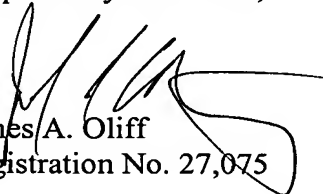
**TRANSLATION OF THE ANNEXES TO THE
INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Attached hereto is a translation of the annexes to the International Preliminary Examination Report (Form PCT/IPEA/409). The attached translated material replaces the material in the specification on pages 4-5 and claims 1-5.

Respectfully submitted,


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degradation in durability is anticipated because many protrusions with acute angle appear on the tire stepping face.

Further, in the case where the thin sheets are laminated in a peripheral direction of the tire, though close contact between those thin sheets can be assured on the inner side of radial direction, but on the outer side thereof gaps are inevitably produced therebetween and not only opening and closing operation of the mold becomes unstable but also degradation in its durability will be caused.

The present invention is made to cope with those problems so far have arisen and thus object of the present invention to provide a method for manufacturing the laminated mold capable of suppressing formation of stepped shape appearing on its profile comparing with the one as originally intended.

Summary of the Invention

The invention of the first aspect provides the manufacturing method of the laminated mold comprising the laminate being formed of a plurality of thin sheets laminated in a widthwise direction or in a peripheral direction of the tire, and the manufacturing method is characterized in comprising the steps of laminating those thin sheets under the condition that the excess portions of them, which exceed the shape of the tire crown portion, are left on the side contacting with the tire stepping face, and after proceeding the lamination

step removal of the excess portions is carried out. By virtue of such a process, the profile of the laminated mold on the side of the tire stepping side can be formed quite the same with that of the tire as originally intended, and as a result the tire, which has both of the profile and the performance equivalent to those obtained through the casting mold currently in use, can become to be realizable easily. It is noted that, though the profile of the tire crown portion as given above is generally meant by that which is taken in a widthwise direction but nevertheless the present invention also includes the profile taken in a peripheral direction of the tire crown portion such as change in depth of grooves in a peripheral direction of the tire.

The manufacturing method of the laminated mold according to the invention of the second aspect characterized in that the removal of the excess portions according to the invention of the first aspect is carried out by means of the shot blast.

The manufacturing method of the laminated mold according to the invention of the third aspect is characterized in that the material to be injected (hereinafter "the material to be injected" shortened to read "injection material") according to the invention of the second aspect is limited to aluminum

What is claimed is:

1. A manufacturing method of a laminated mold comprising a laminate being formed by laminating a plurality of thin sheets in a widthwise direction or in a peripheral direction of a tire comprising the steps of, laminating the thin sheets under the condition that excess portions of respective thin sheets on the side of a tire stepping face exceeding a profile of a tire crown portion are left, and after laminating the thin sheets, removing the excess portions.
2. The manufacturing method of the laminated mold according to claim 1, characterized in that removal of the excess portions are performed by means of a shot blast.
3. The manufacturing method of the laminated mold according to claim 2, characterized in that aluminum powder is used as the material to be injected.
4. The manufacturing method of the laminated mold according to claim 2 or claim 3 characterized in that, after masking boundary portions of respective thin sheets, removal of the excess portions is performed by means of blasting.
5. A manufacturing method of a laminated mold comprising a laminate being formed by laminating a plurality of